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EXAMINER	
RENNER, CRAIG A	

ART UNIT	PAPER NUMBER
2627	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/727,804	DEE, RICHARD H.	
	Examiner	Art Unit	
	Craig A. Renner	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08/04/2009, 12/07/2009 & 02/26/2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,7,10-13,15,16,19 and 21-24* is/are pending in the application.

4a) Of the above claim(s) *4 and 13* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6,7,10-12,15,16,19 and 21-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Upon further consideration and in light of applicant's amendments/ remarks, the restriction requirement set forth in the office action dated 10 November 2009 is withdrawn.

2. Claims 4 and 13 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to one or more non-elected inventions/species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 14 January 2008.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 7, 10-12, 15 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Gerding (US 3,426,338).

With respect to claims 1, 2 and 7, Gerding (US 3,426,338) teaches a data storage system comprising a plurality of read/write heads (includes A, B, C and D in FIG. 1, for instance), each read/write head of the plurality of read/write heads having a plurality of read/write elements (4a/6a, 4b/6b, 4c/6c and 4d/6d, respectively); a plurality of data channels (inherently connected to each of the read/write elements), a subset of the plurality of data channels coupled to a read/write head of the plurality of read/write heads; and a storage medium (line 15 in column 2, for instance, i.e., a "magnetic tape"), the storage medium including a plurality of storage bands (i.e., a storage medium inherently has storage areas/bands), wherein each read/write head is uniquely associated with a single storage band such that the read/write heads are alignable with a single mode of operation (as shown in FIG. 1, for instance), and each read/write element is associated with a corresponding one of the plurality of data channels and capable of reading and writing data from or to corresponding tracks of a corresponding storage band (as shown in FIG. 1, for instance, as it is structurally no different from that set forth in the claims) [**as per claim 1**]; wherein the data storage system comprises a magnetic tape drive (line 15 in column 2, for instance) [**as per claim 2**]; and wherein each of the plurality of read/write heads is coupled to at least two data channels (i.e., inherently there would be a data channel for the read element and a data channel for the write element for each read/write head) [**as per claim 7**].

With respect to claims 10-12, 15 and 16, Gerding (US 3,426,338) teaches a read/write head assembly comprising a plurality of read/write heads (includes A, B, C and D in FIG. 1, for instance), each read/write head of the plurality of read/write heads having a plurality of read/write elements (4a/6a, 4b/6b, 4c/6c and 4d/6d, respectively) each capable of reading and writing data from or to corresponding tracks of a corresponding storage band of a plurality of storage bands arranged on a storage medium (line 15 in column 2, for instance, i.e., a "magnetic tape") with each read/write head being uniquely associated with a single storage band (as shown in FIG. 1, for instance, as it is structurally no different from that set forth in the claims); and a plurality of data channels corresponding to the plurality of read/write elements (as shown in FIG. 1, for instance), a subset of the plurality of data channels coupled to a read/write head of the plurality of read/write heads (as shown in FIG. 1, for instance) [**as per claim 10**]; wherein the storage medium comprises a magnetic tape (line 15 in column 2, for instance) [**as per claim 11**]; wherein the plurality of read/write heads comprises at least one read/write head (A, for instance) having a read/write element (4a/6a) configured for read after write operation when the storage medium travels in a first direction and at least one read/write head (B, for instance) having a write/read element (6b/4b) configured for read after write operation when the storage medium travels in a second direction (i.e., when the second direction is in the same direction as the first direction) [**as per claim 12**]; wherein the subset of the plurality of data channels comprises a read channel and a write channel (i.e., inherently there would be a read channel for the read

element and a write channel for the write element in each read/write head) [**as per claim 15**]; and wherein each of the plurality of read/write heads is coupled to a plurality of data channels associated with one of the plurality of storage bands (i.e., inherently there would be a data channel for the read element and a data channel for the write element for each read/write head) [**as per claim 16**].

5. Claims 1, 7, 10, 16 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by McKay et al. (US 5,761,005).

With respect to claims 1 and 7, McKay et al. (US 5,761,005) teaches a data storage system (FIG. 4, for instance) comprising a plurality of read/write heads (each 60), each read/write head of the plurality of read/write heads having a plurality of read/write elements (each 62, see line 30 in column 3, for instance); a plurality of data channels (each 66), a subset of the plurality of data channels coupled to a read/write head of the plurality of read/write heads (as shown in FIG. 4, for instance); and a storage medium (12), the storage medium including a plurality of storage bands (i.e., a storage medium inherently has storage areas/bands), wherein each read/write head is uniquely associated with a single storage band such that the read/write heads are alignable with a single mode of operation (as shown in FIG. 4, for instance), and each read/write element is associated with a corresponding one of the plurality of data channels and operable to read and write data from or to corresponding tracks of a corresponding storage band (as shown in FIG. 4, for instance, as it is structurally no different from that set forth in the claims) [**as per claim 1**]; wherein each of

the plurality of read/write heads is coupled to at least two data channels (as shown in FIG. 4, for instance) [**as per claim 7**].

With respect to claims 10, 16 and 19, McKay et al. (US 5,761,005) teaches a read/write head assembly (FIG. 4, for instance) comprising a plurality of read/write heads (each 60), each read/write head of the plurality of read/write heads having a plurality of read/write elements (each 62, see line 30 in column 3, for instance) each operable to read and write data from or to corresponding tracks of a corresponding storage band of a plurality of storage bands arranged on a storage medium (12) with each read/write head being uniquely associated with a single storage band (as shown in FIG. 4, for instance); and a plurality of data channels (each 66) corresponding to the plurality of read/write elements, a subset of the plurality of data channels coupled to a read/write head of the plurality of read/write heads (as shown in FIG. 4, for instance) [**as per claim 10**]; wherein each of the plurality of read/write heads is coupled to a plurality of data channels associated with one of the plurality of storage bands (as shown in FIG. 4, for instance) [**as per claim 16**]; and wherein the read/write head assembly further comprises an actuation unit (10, FIG. 1A, for instance), the actuation unit operable to align at least one read/write head of the plurality of read/write heads with the corresponding storage band of the plurality of storage bands with a fine positioning operation [**as per claim 19**].

6. Claims 1, 2, 6, 7, 10, 11, 16, 21 and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Muller et al. (US 5,831,798).

With respect to claims 1, 2, 6 and 7, Muller et al. (US 5,831,798) teaches a data storage system comprising a plurality of read/write heads (86a and 86b in FIG. 8b, for instance), each read/write head of the plurality of read/write heads having a plurality of read/write elements (each 89 and each 88, for instance); a plurality of data channels (inherently connected to each of the read/write elements), a subset of the plurality of data channels coupled to a read/write head of the plurality of read/write heads; and a storage medium (5, FIG. 2), the storage medium including a plurality of storage bands (i.e., a storage medium inherently has storage areas/bands), wherein each read/write head is uniquely associated with a single storage band such that the read/write heads are alignable with a single mode of operation (as shown in FIG. 8b, for instance), and each read/write element is associated with a corresponding one of the plurality of data channels and capable of reading and writing data from or to corresponding tracks of a corresponding storage band (as shown in FIG. 8b, for instance, as it is structurally no different from that set forth in the claims) **[as per claim 1]**; wherein the data storage system comprises a magnetic tape drive (line 1 of the abstract, for instance) **[as per claim 2]**; wherein each of the plurality of read/write heads is displaced in a direction of travel of the storage medium relative to an adjacent read/write head (as shown in FIG. 8b, for instance) **[as per claim 6]**; and wherein each of the plurality of read/write heads is coupled to at least two data channels (i.e., inherently there would be a data channel connected to each of the read/write elements for each read/write head) **[as per claim 7]**.

With respect to claims 10, 11 and 16, Muller et al. (US 5,831,798) teaches a read/write head assembly comprising a plurality of read/write heads (86a and 86b in FIG. 8b, for instance), each read/write head of the plurality of read/write heads having a plurality of read/write elements (each 89 and each 88, for instance) each capable of reading and writing data from or to corresponding tracks of a corresponding storage band of a plurality of storage bands arranged on a storage medium (5, FIG. 2) with each read/write head being uniquely associated with a single storage band (as shown in FIG. 8b, for instance, as it is structurally no different from that set forth in the claims); and a plurality of data channels (inherently connected to each of the read/write elements) corresponding to the plurality of read/write elements, a subset of the plurality of data channels coupled to a read/write head of the plurality of read/write heads [**as per claim 10**]; wherein the storage medium comprises a magnetic tape (5, FIG. 2) [**as per claim 11**]; and wherein each of the plurality of read/write heads is coupled to a plurality of data channels associated with one of the plurality of storage bands (i.e., inherently there would be a data channel connected to each of the read/write elements for each read/write head) [**as per claim 16**].

With respect to claims 21 and 22, Muller et al. (US 5,831,798) teaches a data storage system comprising a plurality of read/write heads (86a and 86b in FIG. 8b, for instance) each associated with a corresponding one of a plurality of storage bands extending across a magnetic storage medium (5, FIG. 2, i.e., a storage medium inherently has storage areas/bands) wherein each of the plurality of read/write heads is displaced along a direction of travel of the

magnetic storage medium relative to an adjacent read/write head (as shown in FIG. 8b, for instance) and wherein each of the plurality of read/write heads is coupled to at least one of a plurality of data channels (i.e., inherently there would be a data channel connected to each of the read/write elements for each read/write head) [**as per claim 21**]; wherein each of the plurality of read/write heads comprises a plurality of read/write elements (each 89 and each 88, for instance) for reading from and writing to, respectively, a corresponding one of a plurality of data channels associated with each of the plurality of storage bands on the magnetic storage medium [**as per claim 22**].

7. Claims 1-3, 6, 7, 10-12, 15, 16, 19 and 21-23 are rejected under 35 U.S.C. 102(e) as being anticipated by Iwama (US 6,778,359).

With respect to claims 1-3, 6 and 7, Iwama (US 6,778,359) teaches a data storage system (FIG. 5, for instance) comprising a plurality of read/write heads (includes 1c and 2c, for instance), each read/write head of the plurality of read/write heads having a plurality of read/write elements (includes 11/12/13/14 and 21/22); a plurality of data channels (inherently connected to each of the read/write elements), a subset of the plurality of data channels coupled to a read/write head of the plurality of read/write heads; and a storage medium (5), the storage medium including a plurality of storage bands (i.e., a storage medium inherently has storage areas/bands), wherein each read/write head is uniquely associated with a single storage band such that the read/write heads are alignable with a single mode of operation (as shown in FIG. 5, for instance), and

each read/write element is associated with a corresponding one of the plurality of data channels and capable of reading and writing data from or to corresponding tracks of a corresponding storage band (as shown in FIG. 5, for instance, as it is structurally no different from that set forth in the claims) **[as per claim 1]**; wherein the data storage system comprises a magnetic tape drive (line 1 of the abstract, for instance) **[as per claim 2]**; wherein the plurality of read/write heads comprises at least one read/write head (1c) having a read/write element configured for read after write operation as the storage medium travels in a first direction and at least one read/write head (2c) having a write/read element configured for read after write operation as the storage medium travels in a second direction opposite the first direction (as shown in FIG. 5, for instance) **[as per claim 3]**; wherein each of the plurality of read/write heads is displaced in a direction of travel of the storage medium relative to an adjacent read/write head (as shown in FIG. 6, for instance, i.e., left-most 1c is displaced from right-most 2c in the direction of travel) **[as per claim 6]**; and wherein each of the plurality of read/write heads is coupled to at least two data channels (i.e., inherently there would be a data channel for the read element and a data channel for the write element for each read/write head) **[as per claim 7]**.

With respect to claims 10-12, 15, 16 and 19, Iwama (US 6,778,359) teaches a read/write head assembly (FIG. 5, for instance) comprising a plurality of read/write heads (includes 1c and 2c, for instance), each read/write head of the plurality of read/write heads having a plurality of read/write elements (includes 11/12/13/14 and 21/22) each capable of reading and writing data from

or to corresponding tracks of a corresponding storage band of a plurality of storage bands arranged on a storage medium (5) with each read/write head being uniquely associated with a single storage band (as shown in FIG. 5, for instance, as it is structurally no different from that set forth in the claims); and a plurality of data channels (inherently connected to each of the read/write elements) corresponding to the plurality of read/write elements, a subset of the plurality of data channels coupled to a read/write head of the plurality of read/write heads [**as per claim 10**]; wherein the storage medium comprises a magnetic tape (5) [**as per claim 11**]; wherein the plurality of read/write heads comprises at least one read/write head (1c) having a read/write element configured for read after write operation when the storage medium travels in a first direction and at least one read/write head (2c) having a write/read element configured for read after write operation when the storage medium travels in a second direction (as shown in FIG. 5, for instance) [**as per claim 12**]; wherein the subset of the plurality of data channels comprises a read channel and a write channel (i.e., inherently there would be a read channel for the read element and a write channel for the write element in each read/write head) [**as per claim 15**]; wherein each of the plurality of read/write heads is coupled to a plurality of data channels associated with one of the plurality of storage bands (i.e., inherently there would be a data channel for the read element and a data channel for the write element for each read/write head) [**as per claim 16**]; and wherein the read/write head assembly further comprises an actuation unit, the actuation unit (line 62 in column 4, for instance) operable to align at least one read/write head

of the plurality of read/write heads with the corresponding storage band of the plurality of storage bands with a fine positioning operation [**as per claim 19**].

With respect to claims 21-23, Iwama (US 6,778,359) teaches a data storage system (FIG. 6, for instance) comprising a plurality of read/write heads (left-most 1c and right-most 2c) each associated with a corresponding one of a plurality of storage bands extending across a magnetic storage medium (5) wherein each of the plurality of read/write heads is displaced along a direction of travel of the magnetic storage medium relative to an adjacent read/write head (as shown in FIG. 6, for instance) and wherein each of the plurality of read/write heads is coupled to at least one of a plurality of data channels (i.e., inherently there would be a data channel for the read element and a data channel for the write element for each read/write head) [**as per claim 21**]; wherein each of the plurality of read/write heads comprises a plurality of read/write elements (includes 11/12/13/14 and 21/22) for reading from and writing to, respectively, a corresponding one of a plurality of data channels associated with each of the plurality of storage bands on the magnetic storage medium (i.e., inherently there would be a data channel for the read element and a data channel for the write element for each read/write head) [**as per claim 22**]; and wherein at least one (left-most 1c) of the plurality of read/write heads comprises a read/write element configured for read after write operation as the magnetic storage medium travels in a first direction and at least one (right-most 2c) of the plurality of read/write heads comprises a write/read element configured for read after write operation

as the magnetic storage medium travels in a direction opposite the first direction (as shown in FIG. 6, for instance) **[as per claim 23]**.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Muller et al. (US 5,831,798).

Muller et al. (US 5,831,798) teaches the data storage system as detailed in paragraph 6, supra. Muller et al. (US 5,831,798), however, remains silent as to "wherein at least one of the plurality of read/write heads comprises a read/write element configured for read after write operation as the magnetic storage medium travels in a first direction and at least one write/read element configured for read after write operation as the magnetic storage medium travels in a direction opposite the first direction."

Official notice is taken of the fact that it is notoriously old and well known in the art to have a head comprise a read/write element configured for read after write operation as a magnetic storage medium travels in a first direction and at least one write/read element configured for read after write operation as the magnetic storage medium travels in a direction opposite the first direction for the

purpose of enabling bi-directional data verification. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to have had at least one of the plurality of read/write heads of Muller et al. (US 5,831,798) comprise a read/write element configured for read after write operation as the magnetic storage medium travels in a first direction and at least one write/read element configured for read after write operation as the magnetic storage medium travels in a direction opposite the first direction. The rationale is as follows:

One of ordinary skill in the art would have been motivated to have had at least one of the plurality of read/write heads of Muller et al. (US 5,831,798) comprise a read/write element configured for read after write operation as the magnetic storage medium travels in a first direction and at least one write/read element configured for read after write operation as the magnetic storage medium travels in a direction opposite the first direction since such enables bi-directional data verification.

Pertinent Prior Art

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. This includes Watrous (US 4,450,493), which teaches a multi-track head arrangement with a plurality of heads (10, FIG. 7) having a plurality of read/write elements (16, FIG. 1); and Ogawa et al. (US 2004/0141255), which teaches which teaches a multi-track tape head arranged in a write/read/write configuration.

Response to Arguments

11. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

12. Applicant's amendment(s) necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig A. Renner whose telephone number is 571-272-7580. The examiner can normally be reached on Tuesday-Friday 9:00 AM - 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on 571-272-4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Craig A. Renner/
Primary Examiner, Art Unit 2627

CAR